KIM, et al.   Q67501
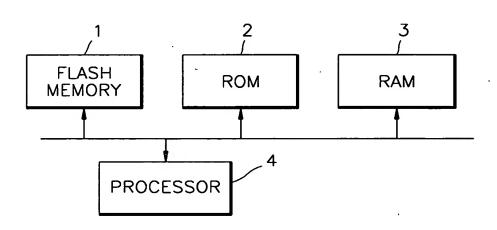FLASH MEMORY MANAGEMENT METHOD
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FIG. 1

FIG. 2

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FIG. 3

LOGICAL ADDRESS
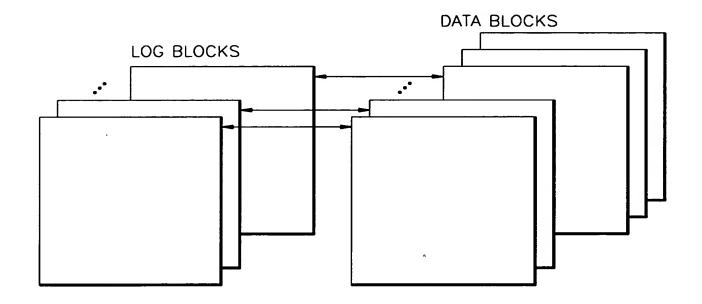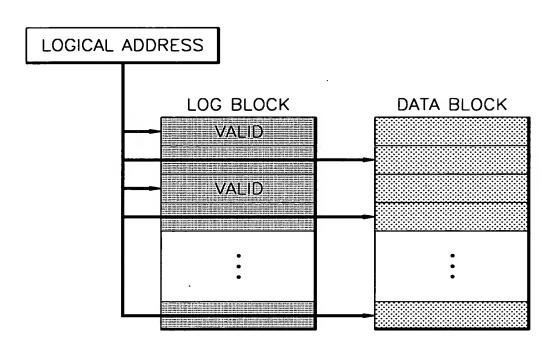
LOG BLOCK   DATA BLOCK

VALID

VALID

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FIG. 4

FLASH MEMORY

MAP
LOG BLOCKS
DATA BLOCKS
FREE BLOCKS

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FIG. 5

FLASH MEMORY

MAP
CHECK POINT
LOG BLOCKS
DATA BLOCKS
FREE BLOCKS

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FIG. 6

LOG POINTER TABLE

ENTRY
ENTRY
ENTRY
⋮
ENTRY

LOGICAL ADDRESS

FLASH MEMORY

FIG. 7

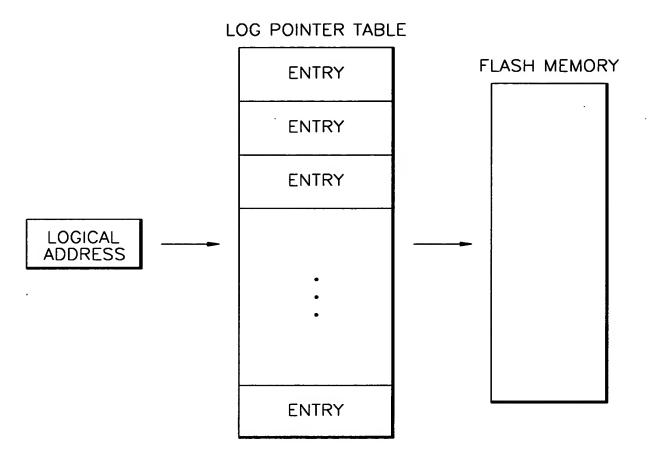| ← BLOCK ADDRESSING →		← PAGE ADDRESSING →
log_blk	phy_blk	page #0
		page #1
		page #2
		⋮
		page #N

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FIG. 8

log_blk	phy_blk	page #0
		page #1
		page #2
		⋮
		page #15

log_blk	phy_blk	page #0
		page #1
		page #2
		⋮
		page #15

log_blk	phy_blk	page #0
		page #1
		page #2
		⋮
		page #15

FLASH MEMORY

LOG BLOCK

DATA BLOCK

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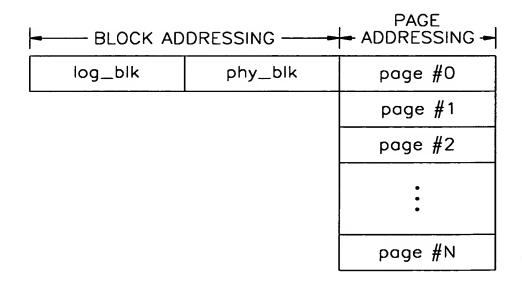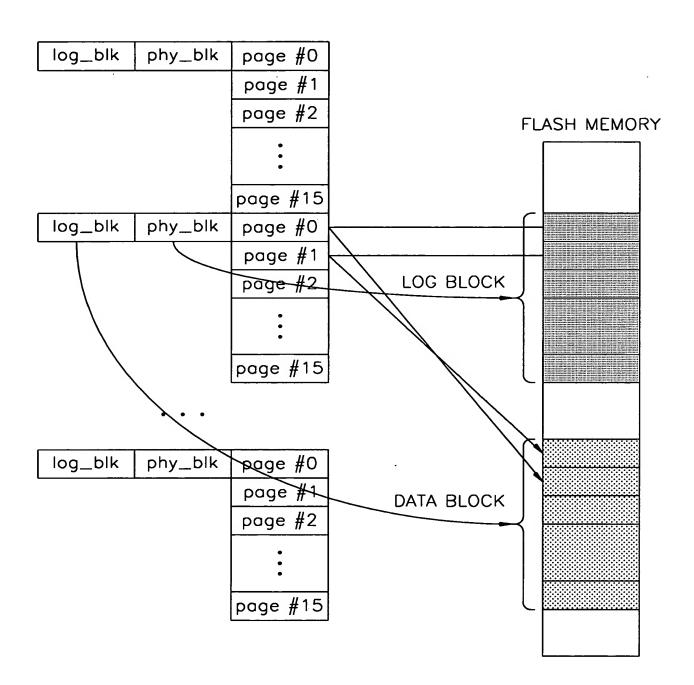Filed: December 31, 2001
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FIG. 9

FLASH MEMORY

LOG POINTER TABLE ENTRY

log_blk	phy_blk	page #0
		page #1
		page #2
		:
		page #15

LOG BLOCK

DATA BLOCK

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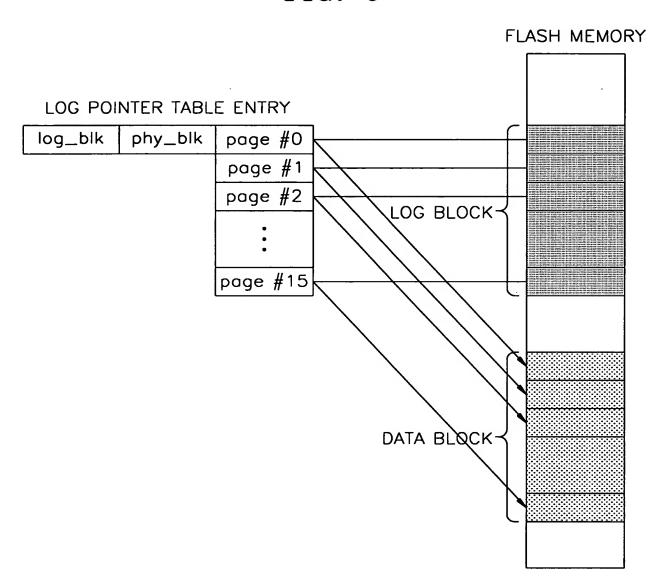Filed: December 31, 2001
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FIG. 10

DATA BLOCK	FREE BLOCK	LOG BLOCK
INVAILD	FREE	VAILD
INVAILD	FREE	INVAILD
INVAILD	FREE	VAILD
VAILD	FREE	VAILD
⋮	⋮	⋮
VAILD	FREE	FREE

FIG. 11

DATA BLOCK	LOG BLOCK
INVAILD	VAILD
INVAILD	VAILD
VAILD	FREE
VAILD	FREE
⋮	⋮
VAILD	FREE

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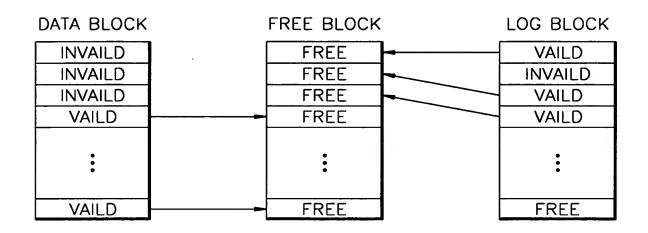Darryl Mexic
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FIG. 12

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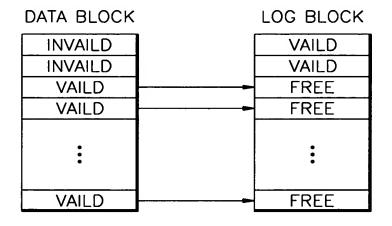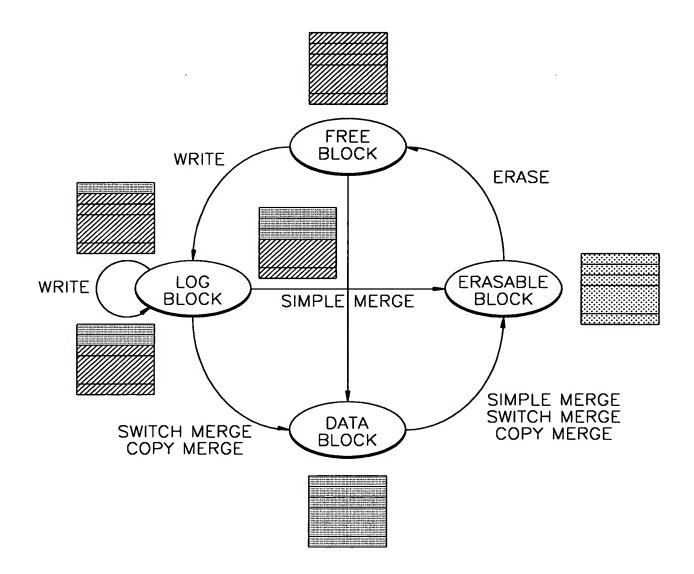202-293-7060
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FIG. 13

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FIG. 14

WRITE

SEARCH LOG POINTER TABLE
WITH LOGICAL ADDRESS — 1401

IS
ENTRY FOUND?   NO

1402   YES

IS PAGE
AT SAME POSITION   NO
USABLE?

1403   YES   1408

                                                      CAN
                              1406   NEW LOG BLOCK   YES
                                               BE ALLOCATED?

WRITE TO   CAN
CORRESPONDING   FREE PAGE BE   NO   NO   1409
PAGE IN LOG   ALLOCATED IN LOG
BLOCK   BLOCK?   ALLOCATE LOG BLOCK
                                                      AFTER BLOCK MERGE

1404   YES

                        WRITE TO   WRITE TO PAGE
                     ALLOCATED PAGE   AT SAME POSITION

1405   1407   1410

UPDATE LOG
PINTER TABLE

END
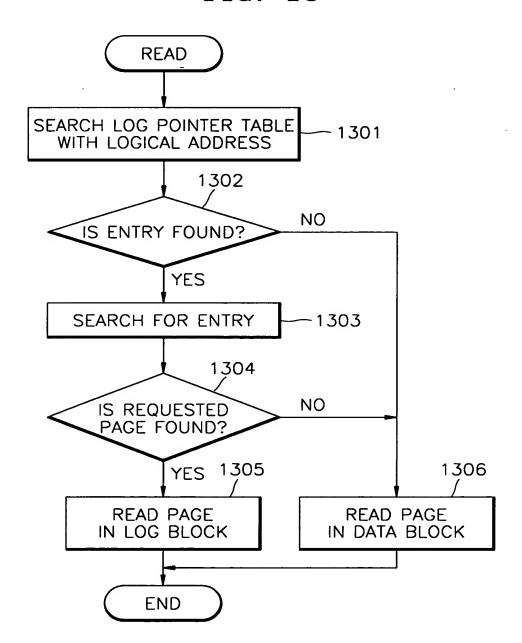
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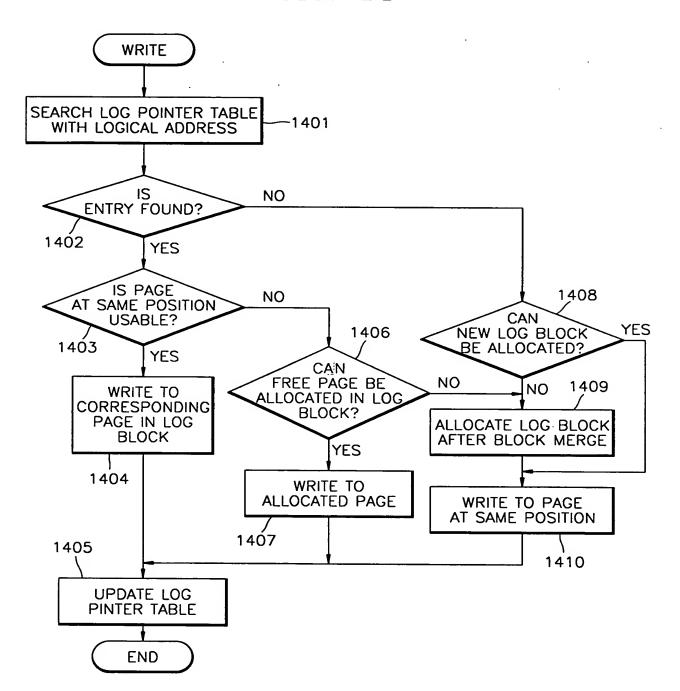# FIG. 15